IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of	**MAIL STOP PRE-APPEAL BRIEF REQUEST FOR REVIEW**
Jonathan HUGHES et al.	Group Art Unit: 1651
Application No.: 10/587,583	Examiner: Kade Ariani
Filed: July 28, 2006	Confirmation No.: 9687
For: PRODUCTION OF A FERMENTATION PRODUCT	

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Claims 1-3, 5-21, and 23 were finally rejected in the Office Action dated September 24, 2010. Applicants request review of the final rejection in the above-identified application. No amendments are being filed with this request. This request is being filed concurrently with a notice of appeal.

Claims 1-3, 5-21, and 23 have been provisionally rejected under the judicially created doctrine of obviousness-type double patenting as allegedly unpatentable over claims 1, 9, and 12-20 of U.S. Patent Application No. 10/523,302, which issued as U.S. Patent 7,455,997 (hereinafter "the '997 patent") on November 25, 2008. Applicants believe that the present claims are patentable over the claims of the '997 patent. However, to facilitate allowable subject matter, a terminal disclaimer over the '997 patent will be submitted under separate cover, as appropriate, once allowable subject matter has been agreed upon. It should be noted that the filing of a terminal disclaimer to obviate a rejection based on nonstatutory double patenting is not an admission of the propriety of the rejection. *Quad Environmental Technologies Corp. v. Union Sanitary District*, 946 F.2d 870, 20 USPQ2d 1392 (Fed. Cir. 1991).

(i) Claims 1, 2, 5, 17, 18, 20, 21, and 23 have been finally rejected under 35 U.S.C. § 102(e) as allegedly anticipated by U.S. Patent No. 7,566,469 (hereinafter "Scheimann"). This rejection is respectfully traversed.

It is the Examiner's position that "Scheimann discloses…the liquor has been subjected to a temperature of at least 50°C…" (Final Office Action dated September 24, 2010, Pages 4-5). However, no particular portion of Scheimann has been cited in the Office Action in support for the foregoing position. While the record is not clear, it appears that the Examiner relies upon a secondary reference, Wall, to suggest that "…a person of ordinary skill in the art at the time the invention was made would have known that stillage as disclosed by Scheimann has been subjected to a temperature of at least 50°C, since during production of ethanol from corn fermentation the temperature is elevated to 90°C (see p. 771 1st column 2nd paragraph of Wall et al. cited above)." (Final Office Action dated September 24, 2010, Page 12).

Thus, it appears that Wall has been relied upon to show that subjecting the liquor to a temperature of at least 50°C is an inherent feature in Scheimann. In this regard, the Examiner's attention is directed to M.P.E.P. § 2131.01, wherein it is provided that to serve as an anticipation when the reference (in this case, Scheimann) is silent about the asserted inherent characteristic, such gap in the reference may be filled with recourse to extrinsic evidence (in this case, Wall). However, such evidence (in this case, Wall) must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill (emphasis added). *Continental Can Co. USA v. Monsanto Co.*,948 F.2d 1264, 1268, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991).

Based on the above, the Examiner's position implies that all fermentation liquors in all fermentation processes are necessarily heated to a temperature of at least 50°C. The foregoing position is clearly inaccurate because depending on the starting materials, the particular desired end product, processing limitations, etc., fermentation liquors may be heated at various temperature and or pressure combinations or may not be heated at all.

It is respectfully submitted that Scheimann does not disclose or suggest a fermentation liquor that has been subjected to a temperature of at least 50°C which is then treated with an anionic polymer, as recited in independent claim 1. At only one point in Scheimann is it generally discussed that a stillage stream is heat treated. However, Scheimann discloses that the stillage stream is first treated with an acrylamide/sodium acrylate copolymer and then a sample of the stillage stream is placed in a 105°C oven for 24 hours. (Example 3). Accordingly, even the closest discussion in Scheimann teaches treatment of the stillage stream with an anionic polymer and *then* heating a sample of the stillage stream. Scheimann's teaching is not the same as or similar to the recitation in claim 1 which provides heating of the fermentation liquor (not just a sample) and *then* treating the liquor with an anionic polymer. Accordingly, it is respectfully submitted that Scheimann, which has been relied upon as anticipatory art, does not disclose or suggest a fermentation liquor that has been subjected to a temperature of at least 50°C which is then treated with an anionic polymer, as recited in independent claim 1.

In view of at least the above, the anticipation rejection over Scheimann should be withdrawn.

(ii) Claims 1-3, 5, 10, 17-21, and 23 have been finally rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Scheimann in view of Wall et al., Effect of Recycling Distillers' Solubles on Alcohol and Feed Production from Corn Fermentation, Journal of Agriculture Food Chemistry, 31(4)1983:770-775 (hereinafter "Wall"). The rejection is respectfully traversed.

The discussion hereinabove regarding the differences between the pending claims and Scheimann is herein incorporated by reference. As discussed hereinabove, the record is not clear as to how Scheimann allegedly teaches all the features of independent claim 1. The Examiner's position, however, is that as "Scheimann teaches the limitations of claims 1, 2, 5, 17, 18, 20, 21 and 23" (Final Office Action dated September 24, 2010, Page 6). As explained in detail hereinabove, Scheimann

does not disclose or suggest a fermentation liquor that has been subjected to a temperature of at least 50°C which is then treated with an anionic polymer, as recited in independent claim 1.

While Wall generally discusses the benefits of recycling, Wall is not directed to a process of separating suspended solids from a fermentation liquor by subjecting the liquor, which has been subjected to a temperature of at least 50°C, to a solids-liquid separation stage, which is assisted by a treatment system, characterized in that the treatment system comprises an anionic polymer, as recited in independent claim 1. More particularly, Wall fails to cure Scheimann's deficiencies. Wall, like Scheimann, fails to disclose or suggest a fermentation liquor that has been subjected to a temperature of at least 50°C which is then treated with an anionic polymer, as recited in independent claim 1.

Further, as previously submitted, there is no reason one of skill in the art would turn to Wall after reading Scheimann because Wall generally relates to the benefits of recycling distillers' soluble whereas Scheimann relates to a method of dewatering corn stillage solids comprising adding to the solids an effective coagulating and flocculating amount of an anionic copolymer. In light of the dissimilar technical focuses of Scheimann and Wall, it appears that Scheimann and Wall have been combined using impermissible hindsight. In this regard, it should be noted that M.P.E.P. § 2142 sets forth that impermissible hindsight must be avoided.

In view of at least the above, Scheimann and Wall, either in combination or alone, do not disclose or suggest a fermentation liquor that has been subjected to a temperature of at least 50°C which is then treated with an anionic polymer, as recited in independent claim 1.

As Scheimann and Wall fail to disclose or suggest a fermentation liquor that has been subjected to a temperature of at least 50°C which is then treated with an anionic polymer, as recited in independent claim 1, Scheimann and Wall, either alone or in combination, also fail to recognize the advantages resulting from the foregoing recited features. In particular, an advantage of the foregoing features is that the yield and/or efficiency of the present process can be improved by effecting a rapid but efficient solids-liquid separation of the solid residues from a fermentation liquor that has been subjected to elevated temperatures (*i.e.*, at least 50°C). (See, for example, page 6, lines 4-15 of the present specification).

Accordingly, the rejection over Scheimann and Wall should be withdrawn.

(iii) Claims 1, 2, 5-9, 11-18, 20, 21, and 23 have been finally rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Scheimann in view of U.S. Patent No. 6,132,625 (hereinafter "Moffett") and further in view of U.S. Publication No. 2003/0155091 (hereinafter "Coffey") and Ovenden et al., Colloids and surfaces A: Physicochemical and Engineering Aspects, Vol. 197, p. 225-234 (2002) (hereinafter "Ovenden"). The rejection is respectfully traversed.

The discussion hereinabove regarding the differences between the pending claims and Scheimann is herein incorporated by reference. As discussed hereinabove, the record is not clear as to how Scheimann allegedly teaches all the features of independent claim 1. The Examiner's position, however, is that as "Scheimann teaches the limitations of claims 1, 2, 5, 17, 18, 20, 21 and 23" (Final

Office Action dated September 24, 2010, Page 8). As explained hereinabove, Scheimann does not disclose or suggest a fermentation liquor that has been subjected to a temperature of at least 50°C which is then treated with an anionic polymer, as recited in independent claim 1.

While Moffett, Coffey, and Ovenden generally discuss flocculation using anionic and cationic polymers and/or particles, Moffett, Coffey, and Ovenden, alone or in combination, are not directed to a process of separating suspended solids from a fermentation liquor by subjecting the liquor, which has been subjected to a temperature of at least 50°C, to a solids-liquid separation stage, which is assisted by a treatment system, characterized in that the treatment system comprises an anionic polymer, as recited in independent claim 1. More particularly, Moffett, Coffey, and Ovenden fail to cure Scheimann's deficiencies. Moffett, Coffey, and Ovenden, like Scheimann, fail to disclose or suggest a fermentation liquor that has been subjected to a temperature of at least 50°C which is then treated with an anionic polymer, as recited in independent claim 1.

In view of at least the above, Scheimann, Moffett, Coffey, and Ovenden, alone or in combination, do not disclose or suggest a fermentation liquor that has been subjected to a temperature of at least 50°C which is then treated with an anionic polymer, as recited in independent claim 1.

As Scheimann, Moffett, Coffey, and Ovenden, alone or in combination, fail to disclose or suggest a fermentation liquor that has been subjected to a temperature of at least 50°C which is then treated with an anionic polymer, as recited in independent claim 1, Scheimann, Moffett, Coffey, and Ovenden, alone or in combination, also fail to recognize the advantages resulting from the foregoing recited features. In particular, an advantage of the foregoing features is that the yield and/or efficiency of the present process can be improved by effecting a rapid but efficient solids-liquid separation of the solid residues from a fermentation liquor that has been subjected to elevated temperatures (*i.e.*, at least 50°C). (See, for example, page 6, lines 4-15 of the present specification).

Further, with regard to Moffett, it should be noted that a combination of anionic *inorganic* colloids are used in combination with organic polymers to clarify aqueous streams. (Col. 2, lines 7-15). In contrast, independent claim 1 recites an anionic *polymer* to assist in separating suspended solids from a fermentation liquor. There is no reason why one of skill in the art would substitute the presently recited anionic polymers with the anionic *inorganic* colloids of Moffett.

With regard to Coffey, there would be no motivation for one of skill in the art to rely upon the discussion of Coffey when considering the present claims because Coffey is directed to cellulosic suspensions in papermaking. It should be noted that a papermaking slurry is generally less than 1 percent dry weight of the solids in the slurry and the solids are primarily cellulosic. (Page 1, paragraph [0002]; see also page 7, paragraph [0083]). In contrast, a fermentation liquor contains biomass derived from materials containing hemicelluloses and lignocellulosic compounds (*i.e.*, lignin and lignin-type substances) or alternatively derived from purer carbohydrate substrates such as sugars derived from crops producing starch. (Page 6, lines 21-26 of the present specification). The dry matter weight percent of the fermentation liquor is in the range of 7%, which is a far greater

concentration than that for cellulosic slurries for making paper. (Example 1: page 15, lines 23-24 of the present specification).

With regard to Ovenden, the Examiner appears to have primarily relied upon this reference to establish motivation to establish proper combination of the other references. (Final Office Action dated September 24, 2010, Page 10). In particular, Ovenden has been relied upon to establish that "the concentration (g/dl) of the cationic polymer…and the dose of the anionic polymer to be added in the method as taught by Scheimann would have been a matter of routine optimization". (Final Office Action dated September 24, 2010, Pages 10-11). In order to establish the foregoing, the Examiner appears to have relied upon page 226 of Ovenden. In this regard, it should be noted that while Ovenden may suggest that "…selection of a suitable flocculation system for a specific application largely depends on the chemistry of the system and flocculation mechanisms" (relied in-part by the Examiner at Page 10 of the Final Office Action dated September 24, 2010), Ovenden goes on to disclose in the next sentence that "…to reveal the flocculation mechanism for the current systems is also one of important goals of our research...main objectives of this work were… 1. … 2. … 3. … 4. to explore the flocculation mechanisms involved." (Page 226). Thus, if anything, Ovenden provides that it is in fact difficult (*i.e.*, unpredictable) to determine the flocculation mechanism for the limited combinations of anionic microparticles and cationic polymers of Ovenden. Moreover, Ovenden indeed "explores" the flocculation mechanism for the limited combinations of anionic microparticles and cationic polymers in pages 226-234. Accordingly, Ovenden actually teaches that a person of ordinary skill in the art would ***not*** have been able to optimize the dose, the type of the polymers, the charge density, and the intrinsic viscosity of the polymers used in a solid-liquid separation system using known methods.

In view of at least the above, the rejection over Scheimann, Moffett, Coffey, and Ovenden should be withdrawn.

The Examiner is invited to contact Applicants' undersigned representative at the telephone number listed below if any issues remain in this matter, or if a discussion regarding any portion of the application is desired by the Examiner.

Respectfully submitted,

Law Office of Shruti Costales, PLLC

Date: December 7, 2010

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